

WHAT IS CLAIMED IS:

1. A planning support program for supporting  
planning of a vehicle, said program making a computer  
5 execute:

an exterior model building step of building an  
exterior model that expresses an outer appearance of  
the vehicle by reading out an exterior parameter group  
associated with an exterior shape of a vehicle, and  
10 changing exterior parameters included in the readout  
exterior parameter group;

an interior model building step of building an  
interior model that expresses interior comfort of  
passengers by inputting passenger parameters associated  
15 with sitting states of the passengers in the vehicle;  
and

a display step of superimposing the exterior  
model built in the exterior model building step, and  
the interior model built in the interior model building  
20 step.

2. The program according to claim 1, wherein said  
planning support program makes the computer further  
execute:

a structure model building step of building a  
25 structure model by reading out a structure parameter  
group associated with a structure of a framework of the

vehicle, and adjusting structure parameters included in the readout structure parameter group, and

the display step includes a step of superimposing the structure model built in the structure model

5 building step on the exterior model and the interior model.

3. The program according to claim 1, wherein the exterior model building step includes a step of changing the exterior parameters on the basis of  
10 vehicle specification values associated with exterior dimensions of the vehicle, and the interior model built in the interior model building step is not influenced by the vehicle specification values.

4. The program according to claim 2, wherein a shape  
15 of the framework which forms the structure model changes in correspondence with a shape of the exterior model.

5. The program according to claim 1, wherein the display step includes a step of transparently  
20 displaying the exterior model to identifiably display whether or not the exterior model and the interior model interfere with each other.

6. The program according to claim 2, wherein the display step includes a step of transparently  
25 displaying a vehicle shape as a combination of the exterior model and the structure model to identifiably

display whether or not the vehicle shape and the interior model interfere with each other.

7. The program according to claim 1, wherein the interior model building step includes a step of  
5 building the interior model by reading out and deforming human type models that express the passengers and seat models that express seats in accordance with the passenger parameters.

8. The program according to claim 7, wherein the  
10 interior building step includes a step of building the interior model by inputting the number of seats as the passenger parameter, and combining the human type models and the seat models corresponding to the number of seats.

15 9. The program according to claim 7, wherein the interior building step includes a step of building the interior model using sitting positions of the passengers for respective seats input as the passenger parameters.

20 10. The program according to claim 7, wherein the interior building step includes a step of building the interior model using sitting postures of the passengers input as the passenger parameters.

11. The program according to claim 7, wherein the  
25 human type model set at a driver's seat of the vehicle includes eye point information and visibility assurance

reference range information indicating a reference range to be assured as visibility from the eye point.

12. The program according to claim 11, wherein the interior model has position information of a  
5 predetermined portion of the vehicle, which is specified by the reference range.

13. The program according to claim 12, wherein the predetermined portion of the vehicle includes at least one of a front header, rear header, pillar, and  
10 windshield lower end portion.

14. The program according to claim 7, wherein the interior model has position information of a predetermined portion of the vehicle associated with oppressive feelings experienced by the passengers, and  
15 the position information is specified by positions of the human type models.

15. The program according to claim 14, wherein the predetermined portion of the vehicle includes at least one of a front header, rear header, pillar, and  
20 windshield lower end portion.

16. The program according to claim 2, wherein the structure parameters include information associated with a sectional shape of the framework of the vehicle.

17. The program according to claim 2, wherein the  
25 structure parameters include information associated with a mechanical strength of the framework.

18. The program according to claim 2, wherein the structure parameters include information associated with a weight of the framework.
19. The program according to claim 2, wherein the  
5 structure parameters include information associated with a material of the framework.
20. The program according to claim 2, wherein the structure parameters include information associated with a thickness of a steel plate used in the framework.
- 10 21. The program according to claim 2, wherein the framework includes at least one of a front pillar, center pillar, rear pillar, side roof rail, front header, and rear header.
22. The program according to claim 2, wherein the  
15 structure model building step includes a step of building the structure model by selectively reading out one of a plurality of structure parameter groups prepared for respective vehicle types.
23. The program according to claim 2, wherein a shape  
20 of the framework which forms the structure model changes in correspondence with a shape of the exterior model.
24. A planning support method for supporting planning of a vehicle using a computer, comprising:  
25 an exterior model building step of building an exterior model that expresses an outer appearance of the vehicle by reading out an exterior parameter group

which is prepared in a database and associated with an exterior shape of a vehicle, and changing exterior parameters included in the readout exterior parameter group;

5            an interior model building step of building an interior model that expresses interior comfort of passengers by inputting passenger parameters associated with sitting states of the passengers in the vehicle; and

10           a display step of superimposing, on a display, the exterior model built in the exterior model building step, and the interior model built in the interior model building step.

25.    The method according to claim 24, wherein the  
15       interior model building step includes a step of building the interior model by reading out and deforming human type models that express the passengers and seat models that express seats in accordance with the passenger parameters.

20       26.    The method according to claim 24, further comprising:

          a structure model building step of building a structure model by reading out a structure parameter group associated with a structure of a framework of the  
25       vehicle, and adjusting structure parameters included in the readout structure parameter group, and

wherein the display step includes a step of superimposing the structure model built in the structure model building step on the exterior model and the interior model.

- 5 27. A planning support apparatus for supporting planning of a vehicle, comprising:

exterior model building means for building an exterior model that expresses an outer appearance of the vehicle by reading out an exterior parameter group  
10 associated with an exterior shape of a vehicle, and changing exterior parameters included in the readout exterior parameter group;

interior model building means for building an interior model that expresses interior comfort of  
15 passengers by inputting passenger parameters associated with sitting states of the passengers in the vehicle; and

display means for superimposing the exterior model built by said exterior model building means, and  
20 the interior model built by said interior model building means.

28. The apparatus according to claim 27, wherein said interior model building means builds the interior model by reading out and deforming human type models that  
25 express the passengers and seat models that express seats in accordance with the passenger parameters.

29. The apparatus according to claim 27, further comprising:

structure model building means for reading out a structure parameter group associated with a structure of a framework of the vehicle, and building a structure model by adjusting structure parameters included in the readout structure parameter group, and

wherein said display means superimposes the exterior model built by said exterior model building means, the interior model built by said interior model building means, and the structure model built by said structure model building means.

30. A planning support system for supporting planning of a vehicle, comprising:

a database for storing a plurality of exterior parameter groups associated with exterior shapes of a vehicle;

selection means for selecting one of the exterior parameter groups from said database;

exterior model building means for building an exterior model that expresses an outer appearance of the vehicle by changing exterior parameters included in the selected exterior parameter group;

input means for inputting passenger parameters associated with sitting states of passengers in the vehicle;



interior model building means for building an interior model that expresses interior comfort of the passengers on the basis of the input passenger parameters; and

5           display means for superimposing the exterior model built by said exterior model building means, and the interior model built by said interior model building means.

31.   The system according to claim 30, wherein said  
10   interior model building means builds the interior model by reading out and deforming human type models that express the passengers and seat models that express seats in accordance with the passenger parameters.

32.   The system according to claim 30, wherein said  
15   database further stores a plurality of structure parameter groups associated with structures of frameworks of the vehicle,

          said planning support system further comprises:

          selection means for selecting one of the  
20   structure parameter groups from said database; and

          structure model building means for building a structure model by adjusting structure parameters included in the selected structure parameter group, and

          said display means superimposes the exterior  
25   model built by said exterior model building means, the interior model built by said interior model building

means, and the structure model built by said structure model building means.